

NEW SPECIES OF ANTHOPHORA FROM THE
WESTERN UNITED STATES (HYMEN-
OPTERA, APOIDEA)¹

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The genus *Anthophora* has a world-wide distribution and is composed mostly of large, swift-flying bees that have a very long tongue. The species inhabiting North America, north of Mexico, may be separated into four groups that seem to be quite natural but certainly are not more than subgeneric in value, excepting the group called *Clisodon* by Patton. This group consists of a single holarctic species, *C. furcatus* (Panzer), which has become differentiated into several local races in both the Old and the New World. It differs from other *Anthophora* not only in habits, but also in structure of the mandibles of both sexes and in the tibial plate of the female; and in the male it lacks the apico-dorsal, strap-shaped, semimembranous appendage of the stipites, which is found in all true *Anthophora*.

The second group, called *Micranthophora* by Cockerell in 1906, embraces the smaller species that have well-developed white or yellow face-marks in both sexes.

In the past, several names have been applied to the third group, although not collectively to the whole group as distinguished here. The name *Amegilla* was adopted by Robertson in 1905 for two of our species having apical white tegumentary bands on the abdomen. *Amegilla* Friese (1897), with *Anthophora quadrifasciata* (Villers) as type, is a very different Old World group, however, lacking tarsal arolia, and in the male lacking also the stipital appendage. Its species are very numerous and have short appressed hair on the abdomen, this hair sometimes covering nearly the whole surface, but frequently forming apical bands. The clypeus of the female is usually yellow, with two large basal black marks. *Amegilla* is essen-

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tially the same as *Asaropoda*² Cockerell, and in my opinion should have full generic standing. In 1903 the name *Anthophoroides* was proposed by Dr. and Mrs. Cockerell for *Anthophora vallorum* (Cockerell) because of the five-jointed maxillary palpi, but this species is closely allied to other species of the group, and, presumably, the number of palpal joints may vary from five to six, as in the California species *Anthophora linsleyi* Timberlake. In 1905 Robertson proposed the generic name *Anthemoessa* for *Anthophora abrupta* Say, using the greater breadth of the third submarginal cell as the principal key character for the female, and the strongly toothed hind basitarsus for the male. The name *Anthemoessa*, strangely enough, had been used previously by Agassiz as an emendation for a Lepidopteran genus; hence, the new name *Melea* was proposed by Sandhouse in 1943. The name *Anthophoroides* Cockerell & Cockerell is available, however, and is, I believe, applicable to the whole group. The characters and constituents of this group will be discussed more fully in a subsequent paper.

The fourth group is composed of those species that are most closely allied to the type species of *Anthophora*, the *A. acervorum* (Linnæus) of Europe. With the addition of many species unknown to Robertson, the character of the breadth of the third submarginal cell proves to be valueless in distinguishing *Anthophora* (s. str.) from *Anthophoroides*. In the female the great length of the third antennal joint (at least equal to the next four and sometimes the next five or six joints combined), and the greater development of the malar space, are the two most valuable characters. These two characters usually are developed concurrently, although one or the other is sometimes more pronounced. In the male the above characters also hold, as well as certain others that are sex-limited. The legs, compared with those of typical *Anthophoroides*, are always slender, with the hind pair little modified. In one species, only, is the hind basitarsus armed with a small tooth. The middle tarsi are usually

² *Asaropoda* Cockerell bears the same relationships to *Amegilla* that *Saropoda* does to *Anthophora*. The two small apical joints of the labial palpi are obsolete or absent in both. It seems best to consider these subgenera, although *Saropoda* has a little more validity than *Asaropoda*, as it has the additional character of four-jointed maxillary palpi.

strongly fringed or provided with long, dense hair, and the apical joint often is ciliated on each side. It should be understood, however, that the male characters here described apply principally to the North American species, as the Old World species have various other modifications which we do not see exemplified in our species.

In this paper five new species of the typical subgenus of *Anthophora* are described from Arizona and southern California, and notes on other species of the group are included as space permits. The material here recorded is in the collection of the Citrus Experiment Station at Riverside, except as otherwise noted.

SYNOPSIS OF SPECIES

MALES

1. Apical joint of middle tarsi densely ciliated on each side with long black hair, these fringes, taken together, more or less circular and remarkably fanlike 2
 Apical joint of middle tarsi having the lateral fringes, when present, either too short or too loose to resemble a fan 4
2. Mandibles normal 3
 Mandibles cut away on each side of a rather conical apical tooth, the inferior surface near the truncation densely clothed with a tuft of short black hair *coptognatha* n. sp.
3. Mandibles long and black; labrum apically compressed and narrowed; pubescence white, intermixed with black on mesonotum.
vannigera n. sp.
 Mandibles yellow except at apex; labrum broadly rounded at apex, not compressed; pubescence fulvous, or fox-red, not mixed with black on thorax *crotchii* Cresson
4. Apical joint of middle tarsi with a definite, although sometimes very short, fringe on each side 5
 Apical joint of middle tarsi not fringed laterally 12
5. Middle tarsi clothed on outer side with ferruginous hair, the hairs more or less flattened and clavate 6
 Middle tarsi either with a conspicuous fringe of long hair behind, or with only a few bristling hairs on outer surface; this hair never ferruginous 7
6. Face-marks white; dense ferruginous hair present at apex of middle tibiae in front, as well as on the tarsus *dammersi* Timberlake
 Face-marks yellow; middle tarsi only thinly clothed with ferruginous hair on outer side *ursina* Cresson
7. Middle tarsi conspicuously fringed with long hair 8

- Middle tarsi not fringed with long hair 10
8. Fringe of middle tarsi very long and loose 9
- Fringe of middle tarsi comparatively dense, black or blackish brown, with some white hair on basitarsus; pubescence fulvo-ochreous, not mixed with black on mesonotum *fedorica* Cockerell
9. Fringe of middle tarsi blackish; the ciliation on each side of the apical joint long, loose, and supplemented with dorsal hairs; labrum normal, broadly rounded at apex *porteræ* Cockerell
- Fringe of middle tarsi white, with a few black hairs on basitarsus; fringes of apical joint short, with black and white hairs intermingled; labrum with a somewhat concave, porrect, and narrowed apical part *pernicis* n. sp.
10. Lateral fringes of apical joint of middle tarsi short, their length not exceeding greatest width of the joint 11
- Lateral fringes of apical joint of middle tarsi more than twice as long as width of joint, but loose; clypeus polished, impunctate; abdomen subfasciate *forbesi* Cockerell
11. Fringes of apical joint of middle tarsi equalling width of joint; pubescence ochereous to fulvous, not mixed with black on thorax; abdomen subfasciate; mandibles black *fulvicollis* n. sp.
- Fringes of apical joint of middle tarsi shorter than width of joint; pubescence fulvo-ochreous, slightly intermixed with black on vertex and mesonotum; abdomen not at all fasciate; mandibles with a yellow spot *platti* n. sp.
12. Middle tarsi not fringed 13
- Middle tarsi with a long, loose white fringe behind, becoming partly black on basitarsus *pacifica* Cresson
13. Hind basitarsi simple; tibial spurs almost straight; face-marks creamy white *neglecta* Timberlake and Cockerell
- Hind basitarsi armed with a tooth on anterior margin; face-marks bright yellow *edwardsii* Cresson

***Anthophora coptognatha*, new species**

The male of *coptognatha* is easily recognized by the unique peculiarity of the apex of the mandibles, which appears to be cut away nearly squarely on each side of a median tooth. The female resembles *A. porteræ* Ckll., but is significantly smaller and has the mesoscutum much less opaque.

MALE.—Black, the tegulæ and small joints of tarsi a little reddened. Labrum, except narrow apical margin and broader lateral margins, clypeus, large lateral face-marks, supraclypeal band, and stripe on under side of scapes, bright yellow. Apical margin of tergites 1 to 6 slightly decolorated. Wings slightly dusky, with blackish stigma and nervures. Hair of head and thorax white, sparsely intermixed with black on vertex and mesonotum, moderately dense, and longest and most dense on the cheeks beneath. Long hair of supraclypeal area medially parted and extending a little obliquely outward on each side over the clypeus, which also is clothed with long hair

on lateral margins. Hair of basal tergite of abdomen moderately long and white; that of following segments short and erect, white on base of tergite 2, more or less black on apical half of 2, black on tergites 3 to 5, and on base of 6, and white and appressed on apex of 6 and on 7, with the long scattered hairs of apical segments mostly light. A thin fringe of short white hair on apical margin of tergites 2 and 3, but apparent only in fresh specimens. Hair of venter and legs mostly white, but black on inner side of middle and hind tibiae and hind femora, and the sparse hair on anterior side of front and middle femora also dark. Hair on inner side of tarsi reddish brown, but black on each margin of the basitarsi. Mandible fringed beneath with long white hair and having a tuft of very short black hair on lower side just before the truncation. Antennal joint 3 longer than the scape and nearly as long as joints 4 to 7 together, the fourth joint much shorter than the fifth. Clypeus moderately bulging and slightly dullish. Thorax dull, the mesoscutum with dense shallow punctures except for two small, nearly impunctate areas on posterior middle. Tergite 7 with a raised, projecting, nude pygidiform area, which extends nearly to the base and is narrowed and truncate at the apex. Legs normal, the apical joint of middle tarsi fringed with black hair, but the hair only slightly longer than greatest width of joint. Length, 11-12 mm.; anterior wing, 9-9.5 mm.

FEMALE.—Like the male, but face entirely dark. Hair of first two tergites white, long on tergite 1, short and with a slight admixture of black preapically on tergite 2. Tergites 3 and 4 with short black hair, and the broad apical tuft of tergite 5 and hair on each side of pygidium also black. The scattered long hair of apical segments mostly white, becoming abundant at sides of tergite 5. Hair on apical margin of tergites 1 to 4 depressed and white, forming a narrow band, but more evanescent and interrupted medially on 3 and 4. Hair of venter black, but with much white along the lateral margins. Hair of legs as in male, but hair on outer side of front basitarsi blackish and forming a rather long fringe. Antennal joint 3 a little longer than the next four joints combined. Tibial spurs of middle and hind legs gently recurved at apex. Labrum coarsely rugose in a large triangular area on disk, the apex of the triangle forming a raised point a little above the rounded apical margin. Clypeus with fine dense punctures. The two nearly or quite impunctate areas on posterior middle of mesoscutum are separated by a densely punctate line and are minutely tessellate and dull in the Arizona types and more shining in California specimens. Length, 12-13 mm.; anterior wing, 10 mm.

Holotype, male and allotype, Buckeye, Arizona, on *Lycium torreyi*, March 28, 1934 (Timberlake). Also the following paratypes: 5 males, 2 females, Buckeye, March 28-30, 1934; 2 males, Riverside, California, on *Lantana* flowers, March 3 and 12, 1936 (F. R. Platt); 1 female, near Victorville, California, on *Dalea fremontii* var. *saundersii*, May 17, 1930 (Timberlake); and 1

female, Adelanto, California, April 11, 1935 (C. M. Dammers).

In the collection of the University of California at Berkeley are four female paratypes: one, Searles Station, Kern County, California, April 25, 1949 (Linsley, MacSwain, and R. F. Smith); one, Scotty's Castle, Death Valley, March 23, 1940; one, Furnace Creek, Death Valley, on *Prosopis*, April 8, 1939 (Linsley); and one, 30 miles south of Needles, San Bernardino County, March 6, 1947 (Linsley).

***Anthophora vannigera*, new species.**

This is similar to *A. lesquerellæ* (Cockerell) and may possibly prove to be a race of that species. It differs from the description of that species, as follows: the clypeus is broadly black on lateral margins, and a yellow supraclypeal band is present (clypeus yellow, except anterior margin, in *lesquerellæ*, and no supraclypeal mark recorded). The labrum has no median notch at apex (a small round notch in *lesquerellæ*) and is peculiarly compressed and narrowed on the apical half.

MALE.—Black, the three intermediate joints of tarsi and the tegulæ somewhat reddened. Apical margin of tergites 1 to 6 glassy hyaline. Labrum, except narrow apical margin and the usual pair of blisterlike spots, clypeus, except narrow apical margin and broad black band above on each side, supraclypeal band, large lateral marks notched above, and scapes broadly beneath, bright yellow. The black bands on clypeus slightly widened above and there separated by an interval about equal to their own width. Supraclypeal band continuous at each end with the inner fork of the lateral marks. Hair of head, thorax, and first tergite long, rather dense, and white, intermixed with black on vertex and mesonotum. Hair of tergites 2 to 5 short, erect, and black, sparsely intermixed with longer, mostly light hairs, especially on 4 and 5, but hair on tergite 2 mainly white (some black hair subapically, or hair sometimes nearly all black on apical half). Hair of tergite 6 black on basal half; otherwise, moderately long, rather sparse, and whitish, like that of tergite 7. Hair of legs white, that of middle legs very long, but hair of hind femora almost entirely, and the long hair on under margin of hind tibiæ and anterior edge of the hind basitarsi, black; some black hairs intermingled on middle femora, tibiæ, and basitarsi. The long posterior fringe on front and middle tibiæ and basitarsi mainly light. Hair on inner side of tarsi ferruginous, and the very short hair on posterior surface of hind tibiæ black, with a slight brown tinge. Apical joint of middle tarsi with a broad, dense fan of black hair. Mandibles long and crossing when closed, the apex acuminate, with the inner tooth well developed and about one third of the length of the mandible from apex. Malar space very short and transverse. Antennal joint 3 equal to the next four joints combined, and joint 4 shorter than 5. Tergite 7 obtusely angled on each side toward base and provided with a nude, elevated, and shortly projecting pygidial area which is about twice as long as wide and slightly

notched at apex. Wings faintly dusky, the stigma and nervures nearly black. Length, about 12 mm.; anterior wing, 9.5 mm.

Described from 7 males (holotype and paratypes) from southern California and Arizona, as follows: Holotype, Palm Springs, California, on *Phacelia distans*, March 22, 1932 (Timberlake); one from the so-called "fish-traps" near Oasis, on *Lycium fremontii*, Feb. 18, 1928 (Timberlake); one from Rock Corral, San Bernardino County, on *Isomeris arborea*, March 29, 1933 (C. M. Dammers); one from Needles, Dec. 4, 1921 (J. A. Kusche); two from Borego, Feb. 25 and 28, 1950 (J. L. Sperry); and one from Buckeye, Arizona, on *Lycium torreyi*, March 28, 1934 (Timberlake).

The paratype from Needles is in the collection of the California Academy of Sciences.

Anthophora ursina Cresson

This species has three well-marked races, as follows: *A. ursina ursina* Cresson, of the eastern states; *A. ursina simillima* Cresson, widely distributed in the western states; and *A. ursina californiensis* Michener, known only from the coastal region of northern California. The ferruginous hair on the middle tarsi of the male of this species becomes more or less black in *californiensis*.

A. pyralitarsis Dours, described from a male from New York, is evidently the same as *ursina*. Both names were published in 1869, and I do not know which has priority, but I prefer to retain the name *ursina* unless it can be shown that *pyralitarsis* has clear priority.

Anthophora porterae Cockerell

Cockerell described this in 1900 from a male from Romeroville, New Mexico, and a female from the Mohave Desert, California. It is a rather common species in the West, flies early in the spring, and is particularly addicted to visiting the flowers of various species of *Astragalus*. It was described as having black hair intermixed with the light on the mesonotum, but not infrequently there are specimens in which this black hair is very sparse or absent. Such specimens would agree well with the characters of *A. affabilis* Cresson (female), but the characters of the male *affabilis*, as given by Cresson, disagree with those of *porterae*. *A. affabilis* was described from Bosque County, Texas

(Belfrage) and is not well known. The record of it by Cockerell, from Engle, Mesilla Valley, New Mexico, could well have had reference to a specimen of *porterae*, lacking the usual black hair on mesonotum.

***Anthophora pernicis*, new species**

*A. pernicis*³ is allied to *A. porterae* Cockerell, but the male differs in having the long fringe of middle tarsi mainly white, the clypeus more shining and sparsely punctured, and the labrum and pygidial area distinctively peculiar.

MALE.—Black, the small intermediate joints of tarsi ferruginous, the apex of mandibles and the tegulae a little reddened. Apex of tergites 1 to 6 decolored, somewhat hyaline. Labrum, except narrow margins and basal spots, clypeus, except very narrow apical margin and a short black streak on each lateral margin above, lateral marks notched above, narrow supra-clypeal band, and scapes broadly beneath, bright yellow. Pubescence white, intermixed with black on vertex and mesonotum, and the hair on cheeks, thorax, and first tergite long and dense. Hair of tergite 2 somewhat shorter and white; that on following three tergites black, with a few of the longer hairs white, especially those along lateral margins. Hair of tergite 6 black, but the longer depressed hair, except narrowly in middle, is white. Hair of tergite 7 black, but that in notch on each side of pygidial area partly white. Hair of legs white, especially the long fringes on front legs, middle tibiae, and tarsi, as well as that on outer side of hind tibiae and tarsi. Hair of hind femora, that on posterior side and inferior margin of hind tibiae, the sparse short hair on anterior side of middle femora, the short dense hair on under side of front tibiae, and the much longer hair on under side of middle tibiae, black. A few black hairs intermixed in the very long posterior fringe of middle basitarsi. Hair on inner side of all basitarsi ferruginous by reflected light. Apical joint of middle tarsi with a short fringe on each side, the hair black, overlaid with white, a little longer than width of the joint but not spreading out like a fan. Labrum somewhat concave beyond the middle, so that the apex becomes porrect, with the margin rounded and minutely notched at middle (notched lacking in paratype). Malar space developed but transverse. Antennal joint 3 as long as the next four joints combined, the fourth shorter than fifth. Mandibles stout but rather long, the inner margin dilated from the middle to the inner tooth, which is about one sixth of the length of mandible from apex. Labrum, clypeus, and yellow lateral areas of face shining, thinly hairy, and sparsely and minutely punctate. Thorax minutely tessellate, dull, the shallow punctures of mesoscutum dense and fine but absent in a small area on each side of median line on the posterior middle of disk. Pygidiform area of tergite 7 nude, reddened, about twice as long as wide, somewhat oval, but truncate at apex; this area prominent and projecting, being set off by a strong emargination on each side, the notch also helping to form a subacute tooth

³ Feminine gender of *pernix* (swift); accent on second syllable.

on each lateral margin. Wings somewhat dusky hyaline, the stigma and nervures nearly black. Length, about 14 mm.; anterior wing, 11 mm.

Holotype, male, Chiricahua Mountains, Cochise County, Arizona, March 26, 1917 (V. W. Owen), in collection of the California Academy of Sciences. Another much-worn male (paratype) from Kyle Canyon, 7500 feet, Charleston Mountains, Nevada, on *Ribes cereum*, June 5, 1941 (Timberlake).

Anthophora forbesi Cockerell

A. forbesi was described from Maricopa, Arizona. It occurs along the eastern border of California, and I have seen specimens from Yermo, San Bernardino County, March 31, 1941 (Lindsley, MacSwain, and Bohart) and from Death Valley, Inyo County, March 13, 1941 (T. H. G. Aitken). It also occurs in Baja California, as is evidenced by a female from 35 miles north of Rosario, March 22, 1935 (C. F. Harbison). This female has brighter ferruginous hair on front tarsi than females from Arizona. The maxillary palpi are five-jointed in both sexes of this species.

MALE.—Similar to female, but hair of thorax above uniformly light. Spot on base of mandibles, labrum, almost entire face below antennæ, and scapes beneath, bright yellow. Apex of tergites 1 to 6 broadly hyaline. Hair of head, thorax, and abdomen entirely whitish, rather long and dense; that on tergites 2 to 7 shorter, mostly erect, but becoming somewhat depressed and bandlike at apex of tergites 2 to 5. Hair of legs white, becoming short and dark on posterior side of hind femora and tibiæ, and mostly black on under side of middle and hind basitarsi. Hair on inner side of front basitarsi ferruginous. Middle and hind basitarsi with a thin, not very long, fringe of white hair behind. Apical joint of middle tarsi fringed on each side with long black hair, but the hair too loose to form a perfect fan. Mandibles rather short, with a small inner tooth. Labrum normal, broadly rounded at apex. Antennal joint 3 about equal to next three joints combined. Tergite 7 with a rather broad projecting lobe at middle of apex, which is slightly emarginate, but disk of segment without a pygidiform area. Face below antennæ and the labrum polished, minutely and sparsely punctate, and thinly hairy. Thorax dull, the mesoscutum densely punctate except in a slightly shining area on each side of the median line on posterior middle of disk. Length, about 13 mm.; anterior wing, 10.5 mm.

Anthophora fulvicollis, new species

This and *A. platti* have the sex-limited peculiarities of the legs of the male reduced nearly to a minimum. Both have the apical joint of the middle tarsi fringed on each side with black hair, but the hair is much too short to resemble a fan. *A. fulvicollis* has the abdomen subfasciate, the mandibles entirely black, and the genitalia of the type seen in *A. fedorica*

Cockerell, *A. pernicios* Timberlake, *A. porterae* Cockerell, *A. pacifica* Cresson, etc.

MALE.—Black, the four apical tarsal joints and base of claws dull ferruginous. Tegulae slightly reddened. Labrum, except marginal black line and basal spots, clypeus, except a small spot on suture on each side above, large lateral marks extended slightly upward on orbits and continuous within with a supraclypeal band, and scapes beneath, rather pale yellow. Apical margin of tergites 1 to 6 narrowly decolorized. Pubescence rather bright fulvous (but pale ochreous in paratype, which is otherwise similar), without admixture of black on thorax and with only very inconspicuous black hair on vertex. Hair of tergite 1 long, dense, and tinged with fulvous; that on following segment short, depressed, mostly light on tergite 2 (except a black patch on each side before the apex), and black on disk of 3 and 4. Apical margin of tergites 2 to 4 with a narrow band of depressed white hair, thinner and obsolescent on 4. Three apical segments with pale ochreous hair, except some black at base of tergites 5 and 6. Venter with an apical fringe of light hair on segments 1 to 6, and short, fine black hair on disk of each segment except the first two. Hair of legs pale ochreous, becoming black on under side of hind femora and on under side and posterior face of hind tibiae. Hair on inner side of basitarsi black, but with a ferruginous tinge by reflected light. Apical joint of middle tarsi with a fringe each side of blackish hair, overlaid with light hair, these fringes about equalling the greatest width of the joint. Mandibles rather short, with a small inner tooth close to apex. Clypeus very convex and bulging, the labrum large and quadrate. Malar space transverse. Antennal joint 3 as long as the next three joints combined, and joint 4 one-fourth shorter than 5. Tergite 7 somewhat broadly ridged in middle, with this part shortly produced and truncate at apex and the lateral margins strongly emarginate between the medio-apical lobe and a short, blunt subbasal angle. Disk of segment covered with hair, except extreme apex of median lobe. Wings slightly dusky, the stigma and nervures nearly black. Length, about 14.5 mm.; anterior wing, 10.5 mm.

Holotype, male, Needles, California, Dec. 4, 1921 (J. A. Kusche), in collection of the California Academy of Sciences. One paratype, male, Douglas, Arizona, April 6, 1933 (W. W. Jones).

***Anthophora platti*, new species**

The male of this species is similar to that of *A. fulvicollis*, but has a yellow spot on base of mandibles, and more than apical half of abdomen is uniformly black. Apex of the stipites of the genitalia bispinose, as in *A. edwardsii* Cresson, *A. forbesi* Cockerell, and *A. vannigera* Timberlake. The female of *platti* is distinguishable from similar species by the medially ridged pygidium, the feebly curved spurs of middle and hind tibiae, the black integument of abdomen, and the fulvo-ochreous color of the dorsal pubescence.

MALE.—Black, the tegulæ and small joints of tarsi slightly reddened. Spot on base of mandibles, labrum, except margins and basal spots, clypeus, except exterior corners and narrow lateral margins, large lateral marks, shallowly emarginate above, supraclypeal band, and scapes in front, bright yellow. Pubescence ochreous to rather bright fulvous above and whitish on under side of head and thorax; it is long and dense on cheeks and thorax, but rather thin on face; on sides of face, middle of face between antennæ, and on vertex and mesonotum, it is intermixed with numerous black hairs; a trace of black is also found on posterior orbits. Hair of first tergite very long and tinged with ochreous or fulvous; that on second shorter and whiter, with some black hairs along the apical margin except at sides; following segments with hair rather short, erect, and black, intermixed with numerous long black hairs and a few whitish ones along lateral margins. Hair of venter nearly all white. Hair of legs white, becoming black on inner side of hind tibiæ and ferruginous brown on inner side of basitarsi. Apical joint of middle tarsi fringed on each side with blackish hair, which is shorter than width of joint. Mandibles short, with well-developed inner tooth close to apex. Malar space linear but evident. Clypeus moderately convexly protuberant, the labrum rounded at apex. Antennal joint 3 about equal to the next three joints combined, the fourth considerably shorter than the fifth. Tergite 7 slightly produced medially and narrowly truncate, the truncation a little emarginate, so that the apex is slightly bidentate, but this structure well concealed by dense black pubescence. Lateral margins of this segment broadly emarginate and not toothed subbasally. Hind basitarsi about six times longer than wide and longer than following joints combined. Length, about 12 mm.; anterior wing, 9.5 mm.

FEMALE.—Similar to male, but face dark. Pubescence of vertex, thoracic notum, and first tergite, fulvo-ochreous, with black hairs intermixed on sides of face, between antennæ, and on vertex and mesonotum. Hair of face otherwise, and of cheeks and under parts of thorax, whitish. Hair of second tergite white, short, and erect, with a few inconspicuous black hairs along the apical margin. Hair of remainder of tergum black, with long black hairs intermixed and some white ones on lateral margins of tergites 4 and 5. Hair of venter black, but with an apical white fringe on segments 2 and 3 and laterally on 4. Hair of legs whitish, but black on anterior side of middle tibiæ and posterior side of hind tibiæ, and a little black hair on under side of hind femora. Hair on under side of tarsi ferruginous brown, margined with black on the basitarsi. Front basitarsi with a blackish fringe behind. Labrum medially rugose on disk, rounded at apex. Antennal joint 3 somewhat longer than next four joints combined. Malar space well developed but transverse. Pygidial plate grooved laterally, with a rounded ridge down the middle. Clypeus densely and finely punctured. Thorax dull, the close shallow punctures of mesoscutum becoming sparser on posterior middle. Length, 13 mm.; anterior wing, 10 mm.

Described from 7 specimens, all collected in southern California in March and April, 1936: 5 males (holotype and para-

types), Riverside, at flowers of *Lantana sellowiana*, March 12, 13, 18 and 21 (F. R. Platt, Timberlake, and Linsley); 1 male (paratype), Acton, Los Angeles County, at flowers of *Salix*, March 15 (Linsley); and 1 female (allotype), Palmdale, April 11 (G. E. and R. M. Bohart).

Two males are in the collection of the University of California at Berkeley.

Anthophora neglecta Timberlake and Cockerell

The male of *neglecta* is similar to that of *A. edwardsii* Cresson, but lacks the tooth on the hind basitarsi and has creamy-white face-marks. The genitalia are of the type found in *A. pacifica* Cresson, but the apical process of stipites are longer than wide. The female is so like *edwardsii* in size and general appearance that it is difficult to distinguish it. I depend upon the black color of the abdominal integument (bluish in *edwardsii*) and the gently curved apices of the spurs of middle and hind legs to distinguish it from that species.

Anthophora edwardsii Cresson

This species was described from California and Nevada. The similar *A. gohrmanæ* Cockerell, which was described from Las Vegas, New Mexico, and differs only in having a yellow spot on base of mandibles and little or no black hair intermixed on the mesonotum, is merely a local race of *edwardsii* and should be cited as *A. edwardsii gohrmanæ* Cockerell. It is true that *edwardsii* as found in California also may have a yellow spot on mandibles, but such specimens have much black hair intermixed on the thorax. It was probably such specimens that formed the basis of Cockerell's record (1905) of *gohrmanæ* from Los Angeles. *A. gohrmanæ coloradensis* Michener apparently differs too slightly from *gohrmanæ* to form a good subspecies.

Anthophora pacifica Cresson

This species has a sex-limited, all-black form in the female, which was described as *A. carbonaria* Cresson and renamed *A. infernalis* by Dalla Torre. This melanic female is widely distributed, having been recorded from Nevada (type locality), Utah, and northern California. In southern California it is the only form of female that is found; hence, for that part of its range it deserves to be cited as a subspecies, *A. pacifica infernalis* (Dalla Torre).